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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/553,598

10/18/2005

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80390(47762)

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08/01/2008

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EXAMINER

NGUYEN, VU ANH

ART UNIT

PAPER NUMBER

4171

MAIL DATE

DELIVERY MODE

08/01/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/553,598	<b>Applicant(s)</b> OKADA ET AL.	
	<b>Examiner</b> Vu Nguyen	<b>Art Unit</b> 4171	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.   |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application                                |
| Paper No(s)/Mail Date <u>10/18/2005</u> .  | 6) <input checked="" type="checkbox"/> Other: <u>Machine-translated JP patent (1 document)</u> . |



## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claim 4 recites "The method of producing a water-based pigment dispersion for ink-jet ink according to claim 1 or 2, wherein, in the kneading step, the content of the styrene-based resin is from 10 to 50% by mass based on 100 parts by mass of the total amount of the quinacridone-based pigment, the phthalimidomethylated quinacridone - based compound and the quinacridonesulfonic acid-based compound, the content of the humectant is from 40 to 80 parts by mass based on 100 parts by mass of the total amount, and the solid content of the kneaded mixture during kneading is from 50 to 80% by mass." It is not clear whether the "total amount" relative to which the amount of the humectant is recited is referred to the total amount of the dispersion or to the total amount of the quinacridone pigment and compounds. The same issue applies to the solid content (that is, relative to which totality is the solid content measured?).

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

5. Claims 1, 3, and 6-10 are rejected under 35 U.S.C. 102(a) as being anticipated by Doi et al. (JP 2004/091590 A).

6. Regarding claim 1, the applicants claim a method of producing a water-based pigment dispersion for inkjet ink, comprising (A) a kneading process for kneading a mixture containing a styrene-based resin, a quinacridone-based pigment, a phthalimidomethylated quinacridone-based compound, an alkali metal hydroxide and a humectant to produce a solid and a kneaded mixture, and (B) a dispersing process for dispersing said solid and kneaded mixture; wherein the styrene-based resin has 60% by mass or more of a styrene-based monomer unit, an unsaturated aliphatic carboxylic acid monomer unit, an acid value of 50-300, and  $M_w$  of 7,500-40,000.

7. Corresponding to the limitations set forth in claim 1, Doi et al. (Doi, hereafter) teaches a method of producing a water-based pigment dispersion for inkjet ink, comprising kneading and dispersing a mixture containing a styrene-acrylic acid-methacrylic acid copolymeric resin having 70 wt% styrene monomer and an acid value of 151 and  $M_w$  of 7,000, C.I. Pigment Red 122 (a quinacridone pigment), phthalimidomethylated 3,10-dichloroquinacridone, potassium hydroxide, and diethylene

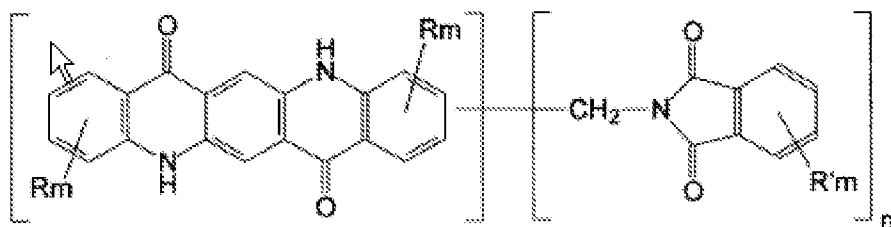
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glycol (a humectant) [0054-0055]. The  $M_w$  of the resin is generally in the range of 3,000-40,000 [0033].

8. Regarding claim 3, which recites the resin in claim 1 to have styrene, acrylic acid, and methacrylic acid monomer units, the disclosed resin is a styrene-acrylic acid-methacrylic acid copolymeric resin as mentioned above.

9. Regarding claim 6, which recites an amount of the metal hydroxide recited in claim 1 to be 0.8-1.2 times the amount required to neutralize all carboxyl groups of the resin, the prior art teaches an amount of alkali metal hydroxide in the range of 50-140% relative to the acid number of the disclosed resin [0036-0037].

10. Regarding claim 7, the phthalimidomethylated quinacridone-based compound in claim 1 is specified to be a compound represented by the following formula:



wherein R and R' each independently represents hydrogen, halogen, an alkyl group having 1 to 5 carbon atoms or an alkoxy group having 1 to 5 carbon atoms, m represents 0, 1 or 2, and n represents 1 to 4. Correspondingly, the prior art teaches phthalimidomethylated 3,10-dichloroquinacridone as mentioned above.

11. Claim 8 specifies the quinacridone pigment in claim 1 to be C.I. Pigment Red 122, which corresponds to the disclosed pigment.

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12. Regarding claims 9 and 10, claim 9 recites an ink composition for inkjet recording, comprising, as a main component, the dispersion recited in any one of claims 1 to 3, 7 and 8; and claim 10 specifies said ink composition is used for thermal inkjet printer. Correspondingly, the prior art teaches an inkjet ink composition comprising the disclosed dispersion [0056] and employs a thermal inkjet printer [0057].

***Claim Rejections - 35 USC § 102/103***

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claim 5 is rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Doi et al. (JP 2004/091590 A).

16. Regarding claim 5, the resin recited in claim 1 is specified to have a  $T_g$  of 90°C or higher. The prior art is silent as to a  $T_g$  value of the disclosed resin. However, considering that the disclosed resin is highly similar to the claimed resin in composition, acid value, and molecular weight, it is reasonable to expect the disclosed resin to have the recited glass transition temperature. Since the PTO does not have proper means to

conduct experiments, the burden of proof is now shifted to the applicants to show otherwise.

***Claim Rejections - 35 USC § 103***

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

19. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Doi et al. (JP 2004/091590 A).

20. Claim 4 recites the method of claim 1 and further specifies the content of the resin to be 10-50% by mass relative to the combined mass of the quinacridone-based materials, the content of the humectant is 40-80 wt% relative to 100 wt% of the kneading mixture, and the solid content of the kneaded mixture is 50-80 wt%.

21. The method disclosed by Doi, as discussed above, employs the aforesaid resin in an amount of 50 wt% or less relative to the pigment (Claim 3). The amount of the



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humectant is about 65 wt% relative to the kneading composition [0055]. The solid content is about 20 wt% [0054].

22. Clearly, the essential difference between the teachings of the prior art and the limitations set forth in claim 4 is that the kneading mixture taught by the prior art has a lower solid content than the claimed value. However, considering that the solid content of a kneaded pigment-resin mixture, though important, is not a determining factor in a preparation of pigment dispersion, and one of ordinary skill in the art can readily adjust the solid content to facilitate the kneading process, depending on, for example, the mode of operation and the type of the kneader employed. A person having an ordinary skill in the art is expected to know that such adjustment can be done by a variety of ways, including lowering the water content or evaporating off a portion of organic solvent. Accordingly, the recited method is an obvious variation of the method taught by the prior art.

23. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Doi et al. (JP 2004/091590 A) in view of Kuribayashi et al. (US 2004/0009294).

24. Regarding claim 2, a quinacridonesulfonic acid-based compound is added to the composition recited in claim 1 either in the kneading step of the dispersing step.

25. The method recited in claim 1 is shown to be anticipated by Doi as discussed above. However, Doi fails to teach a quinacridonesulfonic acid-based compound.

26. Kuribayashi et al. teaches an aqueous pigment dispersion for ink composition. In one embodiment, the dispersion comprises a styrene-acrylic acid copolymer (acid

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value: 250,  $M_w$  5,000), organic solvents, quinacridone pigment (specifically, C.I.

Pigment Red 122), potassium hydroxide, and water [0111]. **[Motivations]** The prior art also teaches that when the organic pigment is dissolved in a non-protic organic solvent, at least one of a crystal-growth-preventing agent may be added, and that examples of the crystal-growth-preventing agent include phthalimidomethyl and sulfonic acid derivatives of quinacridone [0039]. The examiner notes that phthalimidomethyl and sulfonic acid derivatives of quinacridone are also often employed as rheology-improving agents in preparation of pigment dispersion (see, for example, Heindi et al., U.S. 5,618,343, col. 6, lines 18-29). In short, as taught by Kuribayashi, the main purpose of pigment dispersion is to have the pigment finely ground so as to minimize light scattering and enhance transmission property. Compounds such as the sulfonic acid derivatives of quinacridone taught by Kuribayashi prevent the pigment from crystallization, which may cause not only light scattering but also other problems such as clogging of an inkjet nozzle due to large pigment crystals.

27. In light of such benefits, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have employed the quinacridonesulfonic acids taught by Kuribayashi in the pigment dispersion method taught by Doi to discourage the pigment from aggregating-by-crystallization and thereby improve the performance of the dispersed pigment in inkjet inks.

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vu Nguyen whose telephone number is (571)270-5454. The examiner can normally be reached on M-F 7:30-5:00 (Alternating Fridays).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, D. Lawrence Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ling-Siu Choi/  
Primary Examiner, Art Unit 1796

Vu Nguyen  
Examiner  
Art Unit 4171